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JOINT-ILL.

Prof. Wooldridge has done useful service in summarising the essentials of this subject before the Royal Counties V.M.A., whose proceedings appear in our pages this week. The disease has always been an important one; and just now its importance is increasing. It still requires considerable investigation, much of which may be done by pathologists, though clinical observations can evidently do a great deal. Meanwhile, our existing knowledge, unsatisfactory as it is, is sufficient to enable us to control the disease so far as prophylaxis is concerned.

Two known facts are especially important. First, the disease is not a truly specific one, but may be produced by many micro-organisms, acting alone or concurrently. This indicates the futility of vaccines and sera against it—a point which Prof. Wooldridge emphasised strongly. Secondly, the very nature of the disease, as illustrated by its classic symptoms, should warn us that when once it is fairly established curative treatment is not likely to be satisfactory. Thus we are thrown back upon preventive measures as our chief means of dealing with it.

Some pathological questions remain to be answered before our preventive methods can be perfected. There is more to be learned regarding the channels of infection, and it is very probable that these may vary in accordance with the species of micro-organism concerned. It is now generally admitted that some cases at least are not post-natal umbilical infections; and it seems quite possible that either general or local maternal infections, or ingestion, may ultimately assume more etiological importance than is generally accorded to them to-day. But, whatever the channels of infection, there can be no question of the wisdom of the hygienic precautions outlined by Professor Wooldridge, which, if they could be applied with sufficient thoroughness, would probably cover all cases. Undoubtedly, ligation of the cord prevents many infections; but much depends on how and when it is done. The use of an infected ligature, or the occlusion of an already infected cord, are equally disastrous,

We now know quite enough about joint-ill to enable every practitioner to deal with it with a fair amount of success. Actually it is not one disease, but a collection of different infections under the same name; and the clinician needs all existing knowledge regarding it. He has to consider the varied possibilities, and then deal with each case individually.

A POLYVALENT SERUM AGAINST EQUINE INFECTIOUS PLEURO-PNEUMONIA.

Carpano describes a polyvalent serum against equine infectious pleuro-pneumonia prepared by him, which has given good results in practice (*La Settimana Veterinaria*). The serum is provided by horses which have been strongly hyper-immunised with various strains of *Streptococcus equi*, of *Bacterium equisepticum*, and of a special paratyphoid bacillus. This serum, according to the author, has been proved, equally in the laboratory and clinically, to possess preventive and curative properties.

As a preventive, Carpano recommends its use upon all the horses of a stable in which the disease has been proved to exist, upon horses recently introduced, and in particular upon those coming from abroad. The dose is 30 c.c., given by subcutaneous injection. A passive immunity of at least a month's duration is thus conferred; and, in an infected medium, the injection should be renewed every five or six weeks.

As a curative, the serum should be employed in the initial period of the disease, before pulmonary manifestations appear. On the first day of treatment, three doses of 30 c.c. each are sufficient. On the second day two doses are adminstered; and only one dose for the two following days. These curative injections, like the preventive ones, are given subcutaneously.—*Revista de Hygiene y Sanidad Veterinaria.*

LIGATURE OF THE DIGITAL ARTERY IN THE TREATMENT OF PHALANGEAL OSTEITIS.

The treatment was first introduced by Joly, with the object of moderating the flow of blood in the vascular anastomoses of the digital extremity and thus abating the inflammatory process. It has the great advantage over neurectomy of not entirely suppressing the tactile faculty of the foot and not causing congestion of the tissues.

The operation has been frequently performed in France and elsewhere, but has not always given favourable results. Lassarre and Lesbouyries record three unsuccessful cases which they have observed (*Revue Vétérinaire*, 1914).

In the first case the animal was lame from a contusion received from an impact against a wheel in motion. After two months of varied and futile treatment he was subjected to Joly's operation, and appeared cured. But, when he was put back to short work the lameness reappeared in a few days, and finally it was necessary to resort first to plantar and then to median neurectomy.

In the second case the facts were similar, with the difference that the lameness returned eight

months after the horse had been believed cured by the operation.

In the third case, the interval of time between the operation and the return of the lameness was very short.

Although the authors have had only very transient favourable results, they nevertheless believe that the operation may be advised in acute or subacute cases. They think, however, that the numerous successes obtained by Joly and others are not due to the supposed moderation of the active congestion of the foot, but to a passive congestion or a true stagnation-hyperæmia which is really only a form of Bier's treatment.—(*La Clinica Veterinaria*).

Peculiar affection of the Sebaceous Glands of the Nostrils and Lips complicating Pectoral Influenza.

Barthel records the following case (*Zeit. für Veter.*) A horse, during the course of a severe attack of double pleuro-pneumonia, showed crusty productions, formed by desiccated sanguinolent pus, around both nostrils. On cleansing the region, it was found that the openings of the sebaceous glands were very dilated, and that these orifices, when compressed with the fingers, discharged a thick pus. The pituitary membrane was very red; and the skin was so œdematous as to obstruct the nasal apertures and render respiration difficult. The lips presented the same lesions, and were very sensitive to the touch. As in cases of anasarca, the aspect of the head suggested that of a hippopotamus.

Some days later eschars formed, which, on being cast off, bore away shreds of the skin of the upper lip. The lower lip also underwent the same necrotic phenomena. The wounds were treated with ordinary antiseptics and cicatrisation was obtained, the skin regaining its ordinary aspect in fifteen days.

Two other horses of the same regiment presented analagous symptoms in the course of the same epizootic.—(*Revista de Vétérinaria Militar.*)

The Pentastoma Denticulatum in Cattle.

Buri has published an article upon this subject (*Schweizer Archiv. für Tierheilkunde*). Ostertag has already demonstrated that lesions due to the presence of *Pentastoma Denticulatum* are very frequent in the mesenteric glands of cattle. Buri, besides confirming this fact from his experience, has demonstrated that these parasites are also frequently observed by microscopic examination in glands which are apparently normal. Generally two parasites are found together within a small irregular anfractuous cavity, which is filled with a kind of broth formed of chyle and cellular *débris*.

Buri found that the glands in which he encountered lesions or parasites were always those of the small intestine. Ostertag found the same thing nearly always; but he has described various cases of invasion of the glands of the large intestine, and the lumbar and internal iliac glands, by the *Pentastoma denticulatum*. Buri has never been able to do so; he has found the parasite in the parenchyma of the great organs (lungs, liver, etc.), but only very rarely.

Buri has also found an abundant eosinophilia around the encysted parasites. No other author has yet reported this observation, which is not without importance.

The disease usually developes without causing appreciable disturbances in life; but, as various cases of it in the human subject have been reported, it is of importance in meat inspection.—(*Revista de Higiene y Sanidad Veterinaria*).

W.R.C.

Effect of Cold on Trichina Spiralis.

Prior to the investigations in the present paper very little experimental work had been done upon the effects of cold upon encysted trichinæ, and the current belief was that low temperatures do not seriously affect the vitality of the parasites. This belief is shown to have been erroneous by the results of numerous experiments.

Quantities of trichinous meat, varying in weight from a few grams to nearly 400 pounds, were frozen and kept for periods varying from a few minutes to 57 days at various temperatures below the freezing point of water. Usually the process of refrigeration was carried out in cold-storage compartments known as freezers, but in a few cases in which the low temperature was maintained only a short time, a freezing mixture was employed. In most cases the period of refrigeration was between 5 and 20 days.

The meat on removal from the freezer was generally allowed to thaw slowly at ordinary house temperatures; in a few cases, in order to study the effects of rapid thawing, the process was hastened by breaking apart the pieces of frozen meat so that they thawed completely in a few minutes. Generally the meat after thawing was treated as follows:—A portion was chopped or ground into fine pieces, placed in an artificial gastric juice, and incubated at 38 to 40 C. overnight, and then washed with water or a physiological salt solution by decanting and sedimenting. The sediment containing the trichinæ isolated from their capsules was examined microscopically on a warm stage, and the number of active and inactive ones recorded, together with such other observations as appeared worthy of remark. For the purpose of controlling the effects of the process of digestion, some trichinous meat, nearly always from the same carcase as the frozen meat, which had been kept in an unfrozen condition, was digested at the same time, using some of the same lot of digesting fluid. Another portion of frozen meat after thawing was fed to test animals, in most to white or hooded rats specially reared to avoid chances of accidental infection; as a rule, five rats were fed, receiving the meat on several successive days. Finally, unfrozen meat from the same carcase as that used in a given refrigeration experiment was fed to control test animals, usually in much smaller quantities than in the case of the frozen meat. In some instances no control test animals were fed. The test animals as they died,

or after about a month if they lived that long, were examined for trichinæ, the intestines as well as the diaphragm being examined if they died within the first two weeks after feeding; otherwise only the diaphragm. About 30,000 trichinæ were examined from artificially digested frozen and unfrozen meat, and over 500 test animals and control animals were fed and examined.

A considerable proportion of the trichinæ in meat exposed to a temperature of about 15 F. for periods of 23 days or less survive and are quite lively after thawing, but such meat frequently fails to infect test animals. This temperature is injurious to trichinæ, but its effects are uncertain, and meat exposed as long as 23 days has proved to be infectious.

Some of the trichinæ in meat exposed to a temperature of about 10 for periods of 57 days or less generally survive, but the meat frequently fails to infect test animals. A temperature of 10 is more injurious to trichinæ than a temperature of 15, but, like the latter, its effects are uncertain, although meat exposed to it for 14 days or longer has generally failed to produce infestation; or if infestation resulted it was slight.

No infestation has been produced by trichinous meat exposed to a temperature of about 10 for 20 days or longer.

Apparently in the neighbourhood of 10 F. a critical point is reached below which the effects of cold upon trichinæ become suddenly much more pronounced.

Temperatures of 50 F., or lower, profoundly affect the vitality of trichinæ. Only a very small proportion survive an exposure of more than five days, and these are so seriously affected that infections are very unlikely to result. Slight infections, however, have resulted from meat exposed to a temperature of 9 to 0 for ten days.

Trichinæ from meat exposed to temperatures below 15 F. when examined microscopically after thawing exhibit changes in the appearance of the protoplasm. A temperature of 10 produces greater changes than 15, and at the temperature of 5 these are still more pronounced. The more conspicuous of these changes are more or less loss of colour of the œsophageal cell body, more or less solidification of its nuclei, abnormal granulation of its protoplasm, and a more or less dissociation and rounding of the germ cells.

Trichinæ vary in their resistance to the cold, and some individuals survive refrigeration longer and at lower temperature than others.

Within certain limits the rapidity with which trichinous meat freezes or thaws has no appreciable effect upon trichinæ. Apparently the rapid freezing and thawing undergone by very small pieces of meat (a few grammes in weight) adds to the injurious effects of refrigeration, but the natural variations in the rate of freezing and thawing dependent upon variations in the quantities of meat frozen between limits of half-a-pound and several hundred pounds do not noticeably modify the effects of refrigeration upon trichinæ.

The vitality of trichinæ which survive refrigeration does not decrease noticeably during a period of at least a week after the thawing of the meat.

The artificial digestion of trichinous meat for 24 hours at a temperature of 38 to 40 C. in a fluid consisting of water 1000 c.c., hydrochloric acid (ap. gr. 1.19) 10 c.c., scale pepsin (U.S.P.) 2.5 gm., and sodium chloride 5 gm., has no apparent effect upon the activity or structure of the trichinæ released from their capsules by the process of digestion. Trichinæ thus released from their capsules may remain alive and retain their normal activity for ten days or more when kept on a 0.6 per cent. sodium-chloride solution at a temperature of about 20 C., and have been found alive and moderately active at the end of 26 days. They may likewise be kept alive for two weeks or more in tap water at a temperature of about 20 C. Trichinæ have been kept alive and very active for 11 days in a two per cent. sodium-chloride solution at a temperature of about 20 C. Trichinæ in tap water warmed to a temperature of 38 C. become inactive within a few hours, but may be kept in a 0.6 per cent. sodium-chloride solution at this temperature for a similar length of time without apparent injury.

In the practical application of refrigeration as a means of destroying the vitality of trichinæ, meat should be refrigerated at a temperature not higher than 5 F. for not less than 20 days, a period which allows a probable margin of safety of nearly ten days. The employment of higher temperatures of refrigeration as a means of destroying the vitality of trichinæ is not justified in the light of our present knowledge, because of the uncertainty of the effects of such temperatures. Whether temperatures higher than 5 F. may safely be employed by lengthening the period of refrigeration remains to be determined.—*Journal of Agricultural Research, U.S.A.*

F. E. P.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

[National V.M.A.—Southern Branch.]

A meeting was held on Friday, July 28, at 50 Friar Street, Reading, on the invitation of the Hon. Secretary and Treasurer, Mr. G. P. Male, when there were present: Mr. J. Willett, the President; Messrs. J. H. Baxter, H. S. Dunn, J. W. McIntosh, J. H. Parker, Prof. Wooldridge, Messrs. R. J. Verney, and G. P. Male. Several ladies accompanied members, and tea was partaken of before proceeding to business.

Apologies for inability to attend were announced from Prof. Brayley Reynolds, who is in France, Messrs. Williams, T. B. Goodall, T. D. Hughes, Hurndall, and McKerlie.

On the proposition of the President, seconded by Mr. Dunn, the Hon. Sec. was instructed to write to Prof. Brayley Reynolds, congratulating that gentleman on his recent marriage.

Mr. J. W. McIntosh, M.R.C.V.S., F.R.S.E., who had been proposed by the President, was unanimously elected a member of the Association.

The Society's Instruments.

Arising out of the minutes, the Hon. Secretary announced that the instruments belonging to the Associa-

tion, which had been reported at the last meeting as missing, had been returned owing to the publicity given to the fact of their disappearance in *The Record*. An assistant to one of the members (now serving abroad) had read of the matter, and found the instruments. Fortunately they had not been required in the interval.

STUDENTS AND ARMY SERVICE.

The PRESIDENT, on this matter, said he understood that men who had resigned after a year's service were as liable to be called up as any other individuals, if of military age. Of course there was an appeal to the tribunal. Was it a fact that some students who were in their third and final year had not been allowed back?

The HON. SEC. said he was intending to raise the same point, and gave details of the cases of two such men who had approached the War Office in the hope that they might be allowed to complete their studies—one was in hospital, and probably would not be fit for further service.

Prof. WOOLDRIDGE said students of the third and fourth years were "starred," and were therefore automatically exempt if they had not already joined. Those who had already joined were obviously within the jurisdiction of the military authorities. One student in his third year was attending lectures in uniform, and he thought others could do likewise.

The PRESIDENT said great hardship had been inflicted on the two men mentioned by Mr. Male, quite irrespective of their being of use to the profession. He thought it a matter for the Royal College to take up. (Hear, hear).

After further consultation the Hon. Sec. was requested to send the names of the two gentlemen to whom he had referred, with particulars of other cases, in confidence, to the Council of the Royal College of Veterinary Surgeons, and also to the Royal Veterinary College, London, as the interested parties, in the hope that proper steps might be taken.

SPECIMENS.

Mr. PARKER exhibited a halter so contrived with an adjustable strap and buckle that it would fit any head—cart horse or thoroughbred colt—and the arrangement, which is perfectly simple, was entirely approved and appreciated.

Mr. MALE showed two very interesting cases which had recently come under treatment in his infirmary, which were inspected and commented on afterwards by all present. The first, a rather valuable young cart mare that had several sinuses at the back of the near hind heel, and was suffering intense pain. No trace could be found of anything having penetrated the foot, and there was no history of injury.

The PRESIDENT said it was often difficult to find the exact cause of these cases, but probably they were due to some injury to the coronet. There was evidently a good deal of inflammation around the coronet with probably deep seated pus formation, and he advised the application of a blister to the parts, afterwards laying open the sinuses. He took a rather a serious view of the condition.

Mr. MCINTOSH, who had a very large number of foot cases to treat, found that arsenic was a most effective remedy when placed deeply in the sinuses. A large slough was produced which allowed effective drainage.

Prof. WOOLDRIDGE mentioned that he had recently treated several similar cases, three of which it had been necessary to destroy, although every possible care had been taken in their treatment. He believed that the navicular bursa and tendon sheaths were involved. The condition was very deep seated and he advised surgical interference, laying open the sinuses and bursae and removing the diseased tissues. He agreed with Mr. McIntosh as to the efficacy of arsenic but he would not use it in this case.

The second case which was explained by Mr. Dunn was a bay pony with an ulcerating growth near the root of the tail, and an enlarged gland immediately above the anus.

It was argued that it was probably of a cancerous nature and various forms of treatment were advised, some advocating complete excision of the tail and gland, others a removal of the growth on the tail only, while others again thought that operative interference would be useless.

JOINT-ILL.

By PROFESSOR G. H. WOOLDRIDGE,
Royal Veterinary College, London.

Joint-ill; joint-felon; polyarthritis, and rheumatic-arthritis of young stock; navel-ill; omphalo-thrombophlebitis.

This is a disease occurring in young stock, due to infection by way of the umbilicus. It is characterised by abscess formation at the umbilicus, lesions in various joints, most frequently the stifle, hock, and knee, and frequently abscesses in some of the internal organs.

The condition occurs principally in foals, calves, and lambs, and may be produced by a variety of organisms. In the lesions have been found streptococci, staphylococci, ovoid organisms of the so-called pasteurella type, and colon bacilli. The position and character of the umbilicus render it particularly easily soiled, and when bacteria have found a lodgement, the warmth, moisture, and pabulum, both of the tissues and the clot forming in the vessels, afford almost ideal conditions for their growth, and this results usually in the development of an abscess or abscesses. Access to the umbilical veins is then easy, and pyæmia may follow, with lesions in the liver, lungs, kidneys, and the joints, which latter appear in many cases to be predilection seats of the organisms. Organisms may also extend along the urachus to the bladder and set up cystitis. The invasion of the urachus tends to retard its normal closure, with a resulting prolonged moist umbilicus favouring still further infection. Thus a primary umbilical infection may cause pervious urachus, while a primary pervious urachus obviously predisposes to navel infection.

It has been suggested that infection may be hereditary in that the succeeding progeny of some mares become affected, and this view is somewhat supported by those few reported cases in which the joints of foals are enlarged at birth, the result of intra-uterine infection. In my view, however, although that may occur, a more common hereditary feature is that all the progeny of certain dams have a very slowly cicatrising umbilicus due to a rather large umbilical ring, and obviously such an hereditary condition must be regarded as a predisposition. Another reason for progeny developing the condition year after year is frequently that they are born in the same old places without proper care having been taken to disinfect them. In fact that is the case to such an extent that one might almost regard the disease as one of old foaling and calving boxes and of old lambing folds. I have known a farm where year after year most of the foals developed joint-ill. They were all born in the same big, roomy loose box, the only attempt at disinfection being occasional whitewashing of the walls. Good results were only obtained when the farmer, who would not pay attention to detail, was persuaded to allow his mares to foal out at grass as the lesser of two evils. This was immediately successful, and the mares which were thought to be transmitting it were proved "not guilty."

Symptoms.

Symptoms vary according to the degree of virulence of the organism. In a few cases joints have been found swollen at birth. In the ordinary case symptoms may occur in about a week or ten days after birth up to as long as six months, or even longer.

The first signs are usually those of general depression and indisposition to suckle or feed. The temperature is elevated 2° to 4° F., breathing rather hurried, stiffness of movement, joints somewhat swollen; tendency to lie down rather excessively. The bowels are irregular, sometimes diarrhœic sometimes constipated. Loss of condition is very rapid. On examining the umbilicus it may be found to be wet and discharging either a little moisture or even urine, or it may be dry externally and swollen, owing to abscess formation. In other cases where the joint lesions are late in developing there may be no umbilical lesions discoverable.

On examining the joints, some of them are found to be swollen, hot, tense, and painful, with a firm gelatinous consistency of the surrounding connective tissue and fibrous structures, due to œdema. These may then develope fluctuations in different parts of the joints, and these bursting, reveal the existence of abscesses, and liberate a mixture of blood-stained pus and synovia with shreds of tissue. In my experience the diffuse condition is the predominant form in foals, and the stifle the commonest seat; abscess formation appears to be commonest in lambs, while in calves I have met with the two conditions about equally.

Prognosis.

Not very favourable, as the condition is fatal in about 50 % of cases; death may occur in two or three days or two or three weeks. The severity appears to be in direct ratio to the rapidity of the onset after birth. Complete recovery may occur in a number of cases, but in most recoveries the patients remain unthrifty for a long time. In other cases the joints remain permanently enlarged and may cause chronic lameness—a condition obviously more serious in foals than in other species.

Treatment.

As will readily be assumed from the preceding paragraph, curative treatment is far from satisfactory.

Externally. The first thing to do is to examine the umbilicus, and if any abscess is found it must be well opened and evacuated, and thoroughly disinfected with such potent agents as a single dressing of carbolic acid and glycerine, equal parts, and subsequently with less severe dressings, either of phenol, iodine, or corrosive sublimate. The treatment of the joints must vary according to the condition. If abscesses are present they must be evacuated and irrigated with disinfectants, and then injected with clove oil and bandaged. In the non-suppurating joints, a liniment may be applied, consisting of lin. camph. ammon. 1 part, lin. bellad. 2 parts, lin. saponis 3 parts; or a weak biniodide of mercury ointment (1 : 12 or 16) applied.

Internally. Stimulants and internal antiseptics are indicated. The latter may consist of either potass. iodid., hydrarg. biniod., salol and other salicylates, quinine, sodæ hyposulph., and tannoform. Hypodermic injections of nuclein are also of service, while collargol and ichthargan have also been recommended intravenously.

I think at this point I ought to sound a note of warning against a line of treatment that is likely to be very disappointing, as it appears to be based on no reasonable foundation. I refer to the indiscriminate use of vaccines and sera. I can, perhaps, understand a practitioner trying almost anything suggested by a well worded advertisement and accompanied by a plausible leaflet, for a condition of which the treatment is already very unsatisfactory and disappointing. But why add to the disappointments? Vaccines and sera in certain definite and specific affections have undoubtedly proved of the greatest possible value, but I am afraid that their reputation will be endangered by the indiscriminate use of alleged specific vaccines and sera.

The affection we are now considering may be brought about by any of a large variety of organisms apparently either singly or in combination, and though I do know of disappointments following the use of so-called vaccines for joint-ill I know of no satisfactory proof of their usefulness. And I may say the same of a considerable number of other cases of the unjustifiable use of alleged curative and preventive vaccines and sera.

Prevention.

Although curative treatment is so unsatisfactory, fortunately preventive measures are comparatively easy and highly satisfactory. As I have already noted, the affection is largely one of houses and folds. Consequently the old style of foaling and calving boxes must be abolished, and if special boxes are to be used they must be constructed on hygienic principles so that they can be properly lighted, and thoroughly ventilated, drained, and disinfected. Thorough and periodically repeated disinfection, paying especial attention to the floor, is essential. Lambing folds must be destroyed each year after the lambing season is finished, and reconstructed on different sites in succeeding years. In each species the progeny must be received on fresh and unsoiled straw, and the umbilicus thoroughly dressed with a potent disinfectant. The cord must be ligatured with antisepticized material close to the abdominal wall (*i.e.*, about half an inch away) and then cut off about an inch below. A disinfectant should be applied daily in the case of foals until the umbilicus is cicatrized, and in the case of calves and lambs so far as is practicable. A wide range of disinfectants is available, and so long as they are *really* disinfectants there is little to choose between them. Amongst the best are 3 % to 5 % carbolic acid in aqueous solution; 2 % lysol, 1 : 1000 perchloride of mercury; 1 % or 2 % solution of iodine in potass. Iodid. sol., zinc chloride 1 %, or zinc sulphate or copper sulphate 2 % sol., salicylic acid 2 %. If I have any choice of these it is for the metallic salts solutions which have a tendency to harden the stump, and so reduce the liability to infection.

In studs and farms where the disease is known to exist rather more detailed measures should be adopted; as for example, the disinfection of the external genitals of the dam, the receiving of the newly-born on a clean sheet, and the sealing of the navel in the manner suggested by Nocard. This consists of the application *seriatim* of three dressings. The first is made up of iodine ℥ss. pot. iodid. ℥i, and rain water 1 litre (about 1¾ pints). This is swabbed round the parts with a large soft brush, and is followed by the second solution, which consists of iodine ℥ss. in methylated spirits 1 litre, applied by another brush. This spirituous solution is intended to dry the navel, and after it has evaporated the third dressing is applied: this consists of iodine 1 % dissolved in collodion. This process sounds rather complex, but in reality it is quite simple if done methodically. The solutions can all be placed in glass jam jars and labelled No. 1, No. 2 and No. 3 respectively, and the handle of the brush in each case passed through a hole in the cork. The jars are kept at hand at the time of the birth, and as the newly-born is held on its side or back for ligaturing the umbilical cord the dressings are very easily applied. There is no doubt that some of the less intelligent farmers and herdsmen will not be persuaded to undertake the process, and the nearest simple approach to it consists in the application of Stockholm tar to the umbilicus after ligation and disinfection.

One must not forget the calf sheds so largely employed on dairy farms where the calves are often separated at

birth from the mothers. These places are frequently of the filthiest description, dark, undrained and unventilated; the calves often standing up to their knees and hocks in wet material, half litter and half excreta. How can young animals be expected to resist infection of some description under such conditions?

Then again, on infected premises attention must be paid to the possibilities of infection by the mouth. Mammary glands of the dams should be kept clean, and all feeding utensils such as suckling pails, etc., constantly steamed or scalded. If any animals become affected they must be immediately removed from contact with the healthy: no abscesses should be opened in the place where others are kept, and a separate attendant must be told off to look after the affected animals.

The condition is a serious one, for it entails enormous losses, and it is only by tackling it seriously that it can be controlled. It can be controlled, but only by adopting stringent preventive measures, and not relying upon curative treatment.

Discussion.

The President, in opening the discussion, said the paper would be read with very great interest by many in the profession. Personally, he had not seen a case of joint-ill for something like twenty years: but he was sure the experiences of other members would be valueable.

Mr. Verney was sure they were all very much obliged to Prof. Wooldridge for his paper, which was on a subject that the Association had not had brought before them for a very long time—the last occasion when they had discussed it being when Mr. G. E. King, of Abingdon, read a paper. He (Mr. Verney) always made it a *sine quâ non* with his clients that never under any circumstances should a ligature be put on the umbilicus. If there was the slightest moisture exuding he syringed out with a saturated solution of bichloride and methylated spirit, and from that he had had good results. Of course, he always had the umbilicus disinfected when a foal was born. A ligature was a very good minimiser of infection; but it must not be done with dirty string or hands, or a bootlace and dirty knife, as he had known. (Hear, hear, and laughter). He believed that joint-ill usually started in the umbilicus, and in cases where he had held a post-mortem he had found extensive suppuration, sometimes right up to the bladder. To disinfect the surrounding hair at the same time he used iodine, but methylated spirit he had found quite as good. He had met a man who thought highly of the injection of white hellebore under the skin; but, personally, he had never tried that. (Laughter). He found it best for mares to foal in the field, if the weather was suitable. (Hear, hear).

Mr. Parker said his practice in treating pervious urachus was to inject with about two drachms of tincture of iodine, used with a long tube. He had a silk suture tied, and kept it dry: and of half-a-dozen cases so treated every one had proved successful. He had seen foals born with joint-evil where nothing at all appeared to be the matter with the umbilicus. He knew of one thoroughbred born with it that afterwards won races.

Mr. Baxter said he had had very good results with acetozone, using twenty grains in a pint solution, giving one ounce every three or four hours; but he only gave it orally. If the urachus was pervious he had mercurial ointment rubbed on the navel every day. He had not got on at all with the suture in this condition. He also used Stockholm tar at birth.

Mr. McIntosh observed that it was a long time since he had a case, but, like Prof. Wooldridge, he believed in prevention. Where they had infection they should simply clear away all the blood, dress with iodine, and treat with antiseptics.

Mr. McIntosh said the importance of the matter was becoming so much realised in Scotland that the Farmer's Association there had taken it up; and Mr. Brown, of Aberdeen, had written a paper on the subject, in which he advocated strongly the use of serum. In Inverness also it appeared to have assumed an endemic—why, he could not say. He asked Prof. Wooldridge whether the disease was less common among calves and lambs than it was among foals.

Prof. Wooldridge: In some districts it is quite as common, but not in others.

Mr. Male wished to add the thanks of the meeting to Prof. Wooldridge for coming to Reading. He very kindly gave them a choice of papers, but he (Mr. Male) thought that was the most important subject, owing to the great increase in the breeding of horses in England, and still more in Scotland.

As they were aware, the Clydesdale Horse Society had passed a resolution and voted £500 towards the investigation of joint-ill. He thought a resolution might well be passed that day begging the Board of Agriculture to investigate the matter.

During the past twenty years, he supposed, the breeding of Shire horses had increased a hundred fold in England, breeders and farmers having taken up the matter very seriously.

He was told recently of a veterinary surgeon in the East of England who injected a serum into a foal which the day before had an enlarged joint and had to be got up to suck, being in fact in the last stages of the disease, and after one injection the foal was cured the next day. They ought to know all about that serum. (Laughter). Seriously, many things about the pathology of the disease required investigating.

He had been told for a good many years that germs entered the system through the navel after birth. No doubt that did occur, but to his mind there were very many cases which could not be explained in any other way than that the foal was infected during its intra-uterine life, whether from the germs growing inside the uterus, in the same way that abortion bacilli grew, or whether through the blood of the dam being infected, or even that the sire was infected in the same way as in a case of contagious abortion. Prof. Wooldridge had not said very much about that; but he was evidently inclined to think that nearly all cases were due to want of cleanliness, and he specially blamed foaling boxes, and thought that most cases were due to want of care on the part of owners. Most of those present would no doubt agree; but that had not been his (Mr. Male's) experience recently. He had found many cases in places where great care was taken to have everything very clean, and the navel dressed persistently. He had had cases where the mare's parts had been cleansed, where the box was newer and larger, and disinfectants put on the floor, the foal's navel also being painted with tincture of iodine, and iodoform powder put on afterwards—and yet joint-ill occurred. That was in a new stud, too.

He detailed the case of a mare that had had three foals by three different horses, and at three different places, but each had developed joint-evil in spite of every care being taken. He could quote the case of another mare that had four foals, all of which developed joint-evil despite every care. He thought the success that had attended some treatments might be due to the virulence of the disease being less in some cases, and to differences in the organisms present, which might also account for the want of success when serum treatment was adopted in some outbreaks, while in others it appeared to be very beneficial. A cure might be found if they could find the actual cause of the trouble; and that was a point which, in his opinion, the Board might well take up. He agreed with Mr. Verney that thoroughbreds were much less affected than Shires and Clydes-

dales. In thoroughbred stocks the foaling box was used, while many cart mares foaled out in the fields. He had found collodion and iodoform very good in "sealing up," but in many cases that had proved fatal; the suppuration had probably gone right up the cord. In his opinion infection by the mouth was a matter that should be thoroughly looked into. They knew that abortion bacilli got into the mouths of calves during uterine life, and the same might occur in the case of foals; also, perhaps, in the same way that puppies took in the eggs of round worms, *i.e.*, from the infected teats and udder.

He did not think that, in the present state of their knowledge, the disease could be prevented, and so he would beg the Board, in view of its seriousness, and the losses caused by it, to investigate the disease. (Hear, hear).

Mr. DUNN could not agree with Mr. Verney as to ligatures, as he thought them most important. He considered that in country practice all farmers should be impressed with the idea that something absolutely aseptic should be supplied. This season they had had the cases of two valuable Shire foals which had quite healthy navels, but in about two months developed swelling in the stifle. It was difficult to say whether it was joint-evil or some other condition. He thought cauterising the navel at birth with silver nitrate a very good practice. (Hear, hear).

REPLY.

Prof. WOOLDRIDGE thanked the gentlemen present for the interest they had taken in his paper. He thought the trend of the discussion went, to some extent, to support Mr. Male's idea that further investigation was called for. He still believed that joint-ill could be prevented, at any rate in a large proportion of cases; although he did not guarantee every case could be prevented. The need for further investigation applied especially to cases where joints were enlarged, the foal having obviously been affected at birth. It should be enquired into whether that was due to uterine infection or to a general infection of the mother being transmitted to the progeny. Then there was the point—in which Mr. Male concurred—the possibility of infection by way of the mouth. In his opinion, the vast majority of cases were due to infection at the umbilicus after birth, but there were other cases which could not be so accounted for.

Mr. Verney objected to ligatures. He thought the majority of the members present rather agreed that ligatures were advisable; but he quite agreed with Mr. Verney that the ligatures he spoke of did a great deal more harm than good. If those people were provided with strong ligature silk to use at the birth of a foal, they would do away with the risk of the use of a bootlace or any bit of string which might be handy; but clearly those who would not do as they should, after the necessity had been impressed on them, must be left to "gang their ain gate."

As to the strength of disinfectants, Mr. Verney's success had no doubt been due to his accepting the principle; but he (the speaker) thought a very strong ligature would give better results. He was afraid that some veterinarians, as well as clients, were looking for a short cut to cure in those things. They would not find it.

His opinion of vaccines was that since the condition could be produced by a host of different organisms the use of vaccines was only asking for disappointment. It was absolute quackery, as there was no basis for expecting good results.

Mr. Male, in pressing his case for further investigation was quite right when he said they could find a cure if they could find the actual cause. But he thought it had been proved that the actual cause was multiple—that several different organisms could produce it. He thought it possible that those organisms found in affected animals might only be secondary infections, occupying the same position as the so-called swine fever bacillus which was undoubtedly responsible for the lesions in the intestines. (Hear, hear).

Prof. Wooldridge concluded by saying that he would, with pleasure, second Mr. Male's resolution in favour of further investigation. (Hear, hear).

The resolution, which ran in the following terms, was then put to the meeting, and carried unanimously:—

"That in view of the losses among valuable foals in this country due to joint-ill, this Association begs the Board of Agriculture to take immediate steps to investigate the disease."

A very cordial vote of thanks was accorded Prof. Wooldridge for so kindly coming down and giving his valuable paper, on the proposition of the Hon. Sec., seconded by the President, and duly acknowledged.

The meeting closed with a vote of thanks to Mr. Willett for his conduct in the chair, moved by Mr. Verney, and seconded by Mr. Dunn.

G. P. MALE, Hon. Sec.

TREATMENT OF SCABIES IN MAN BY SULPHUR VAPOUR.

By MAJOR JOHN BRUCE, R.A.M.C. (T.), and CAPTAIN STANLEY HODGSON, R.A.M.C.

As ordinary treatment by sulphur inunction is slow, usually taking from seven to fourteen days, we endeavoured to find some method which would be simple, swift, and efficacious. We have given sulphur dioxide gas a trial for twelve months, and have found it meet our requirements. The method of treatment and the apparatus are as follows:—

Cabinet. The cabinet is constructed on the lines of a "home Turkish bath," and is made of ½ in. tongued and grooved match-boarding on a framework of 2 in. timber. It is intended to accommodate two patients at once. As it is necessary for the cabinet to be used out of doors, we provided a canopy over it 2 ft. high, covered with canvas, so as to protect the patients from sun or rain. The apertures for the head must be small—about 5 in. in diameter. The top cover, with apertures for necks is in three sections, the two outer ones, each with semi-circle for a neck, slide into position. The inside of the cabinet is lined with thick brown paper, and the roof junction with felt to prevent escape of vapour. One door is sufficient—it must fit closely.

Method of procedure. The patient is given a hot bath, allowed to soak for five minutes in the water, then well rubbed with soap—either soft or ordinary yellow bar—and the skin scrubbed to open the burrows. The patient is then transferred to the cabinet, placed on the seat with the head protruding through the aperture in the roof and the sliding board adjusted. A wet towel is applied round the neck to prevent the escape of fumes, a sulphur candle placed in the corner of the box is lighted, and the door closed. An orderly must remain constantly in attendance so as to remove the patient at once should he show signs of faintness or develop any difficulty in breathing from escape of fumes. At the end of fifty minutes the lid is quickly removed, and the patient returns to the bath-house, where he puts on clean and warm clothing. Sufficient air to keep the candle burning will find its way through the cracks around the door.

Clothes. It is necessary to send with the patient all his kit, every article of clothing that he possesses, his blankets, his palliasse and pillow. If a Thresh or steam disinfector be available, all suitable articles can be treated by steam. We used the portable disinfecting box with small boiler for several months, and found it very efficient.

The sulphur candle which we found most suitable was the Jeyes' sulphur candle (large). A quick-burning candle with a large wick gives off too irritating a vapour, and the patient is unable to stand the treatment for more than thirty minutes. There is a tendency under these circumstances to produce troublesome erythema.

No antiseptic should be added to the bath, as it may produce irritation of the scrotum, axilla, and other parts where the skin is tender. If properly administered with the above precautions there should be no feeling of discomfort—rather the reverse. We have had patients asking for a second dose of the box because of the relief afforded. A slight general desquamation often follows the treatment. Freedom from itching is immediate. For example, we treated one man from the Expeditionary Force who had been suffering from the disease for two months, and the next day he told us that the luxury of a long night's sleep, without scratching, had been perfect bliss! In very cold weather we occasionally put a small paraffin stove in the box to warm it before putting in the patient.

Results. We have treated over two hundred cases, and have had about two per cent. returns, and in these cases we think some article of clothing had escaped disinfection and thus reinfected the patient. The cases giving the best results were those which had not been under any other treatment. The great merit of the treatment is that cases can be returned to their unit on the same day as received and resume duty next day. We have treated in one box as many as twenty cases in one day.

The box we used was made by one of our non-commissioned officers, Quartermaster Sergeant Colecliffe, from a sketch supplied by Captain Hodgson.—*Brit: Med: Jour:*

Catgut manufacture in Edinburgh.

A factory has been established in Edinburgh for the manufacture of surgical catgut ligatures. The catgut used in this country prior to August, 1914, came from Germany, and since that date American gut has largely taken its place. The reports as to the quality of the Edinburgh product are encouraging. A number of leading Edinburgh surgeons have used it with satisfactory results. The manufacturer states that after extended experiments he has found it impossible to produce from catgut obtained under septic conditions a sterile ligature, by means of subsequent medication after the strings have been twisted and dried, without to some extent altering the character of the gut and impairing its tensile strength. The strength of the chemical solutions which require to be used and the length of time it is necessary to allow the catgut to remain in contact with them cannot be otherwise than detrimental to the ligature. Much of the trouble experienced through irritation in the suture is on account of lack of uniformity of absorption has, he considers, been due to this non-scientific method of preparation of medical ligatures. The sterile ligatures are manufactured in Edinburgh from the raw intestines, selected from freshly killed animals, to the finished article ready for immediate surgical use. The director of the Royal College of Physicians' laboratory has made a favourable bacteriological report upon it.

Sterile catgut is manufactured in Edinburgh by Messrs. G. F. Marson and Co., 7 Meuse Lane, South St. Andrew Street.

Lady Tourist: "This must be a very healthy village. Now, what may the death rate be?"

Old Inhabitant: "Wonderful steady, ma'am. Wonderful steady. One death to each person—right along?"

ARMY VETERINARY SERVICE

Extracts from *London Gazette*,

WAR OFFICE, WHITEHALL, Aug. 3.

REGULAR FORCES. ARMY VETERINARY CORPS.

Temp. Lt. C. E. Andrew relinquishes commn. on termination of engagement (July 1).

Temp. Lieuts. to be temp. Capts.:—P. J. Turner (July 22); R. K. Porteous (July 23); C. K. Lomas (July 24).

To be temp. Lieuts.:—A. S. Black, A. H. MacLeod, G. N. Jull, R. H. Lay, E. R. Corbett, A. T. Andrew, C. C. Corbett, S. F. Spurr (July 6); E. Salisbury (July 7).

Aug. 4.

To be temp. Lieut:—G. C. Taylor (July 24).

Aug. 5.

To be temp. Lieuts.:—L. E. Prichard, J. S. Keane (July 24).

Aug. 7.

Temp. Lieut. to be temp. Capt.:—A. C. Piesse (July 27).

To be temp. Lieuts.—T. Bannatyne, J. G. E. Gallie, A. Rouse (July 24); S. C. J. Bennett (July 25).

Aug. 8.

Temp. Lieuts. to be temp. Capts: G. G. Pook (July 25); W. Walker, H. C. Rockett, J. Simpson (July 26).

To be temp. Lieut:—J. A. Power (July 25).

SPECIAL RESERVE OF OFFICERS.

Aug. 4.

Lieuts. to be Capts.:—W. W. Henderson, with seniority next below T. J. Faithfull; R. C. Wheeler, with seniority next below J. A. McMenamin (Aug. 5, 1915); D. H. Dimes (July 2).

TERRITORIAL FORCE. ARMY VETERINARY CORPS.

Aug. 4.

Lieuts. to be Capts.:—J. Macintyre (Apl. 2); J. Somerville (July 6); W. Sime (July 17).

The following names are included in the published casualty lists:—

DIED—Pte. M. Johnson, 4948; Pte. A. Monks, 5821; Pte. T. Thurgood, 10375.

Trimethol—an intestinal anæsthetic.

This preparation has been recommended to the members of a Connecticut medical society by Dr. J. T. Ainslie Walker. Trimethol is a benzene derivative, $C_6H(CH_3)_3(OCH_3)OH$, a trimethylmethoxyphenol, put up in the form of a 50 per cent. gelatine emulsion. It is stated to have a Rideal-Walker coefficient of 20, and to pass unchanged through the intestine; hence it is recommended in such conditions as offensive diarrhœa, enteritis, mucous colitis, and the like. We understand that it may be obtained from Messrs. John Bell and Croyden, Ltd., 50 Wigmore Street, W.

Formulæ for Formaldehyde Disinfection.

(1) Paraformaldehyde 1 oz., Potassium permanganate 2½ oz., Water 3 oz. (2) Chlorinated lime 60 gms., Paraform 30 gms. Mix quickly and add (pour over) 90 c.c. of water immediately. The mixture of chlorinated lime and paraform will commence to react even before the addition of the water; therefore it is necessary to work rapidly.

(3) Chlorinated lime 60 gms., Water 20 c.c. Mix thoroughly, and add Formalin 75 c.c. These formulæ are used by health departments of some of the United States of America, and are dealt with in a paper on Aerial or Gaseous Disinfection in the *Journal of the American Pharmaceutical Association*.

SUBSCRIPTIONS TO R.C.V.S.

The Secretary of the Royal College of Veterinary Surgeons begs to acknowledge the receipt of the following subscriptions for 1916 to the College funds:—

W. Ackroyd Halifax	£1	1	0
T. Bowlas, Penrith	1	1	0
J. C. Hally, Wellington, Somerset	1	1	0
F. C. Minett, Capt. A.V.C.	1	1	0
Geo. Moir, Capt. A.V.C.	1	1	0
R. A. Philp, Brentwood	1	1	0
John Renfrew, Glasgow	1	1	0
W. E. Schofield, Major A V.C.	1	1	0
E. R. Smythe, Falmouth	1	1	0
R. H. Smythe, Redruth	1	1	0
Andrew Spreull, Major A.V.C.	1	1	0
James Spreull, Transvaal	1	1	0
David Weir, Capt. A.V.C.	1	1	0
Previously acknowledged	708	12	6
	£722	5	6

The Income-Tax Muddle.

This tax touches the breeches pocket, and therefore is of importance to all of us, and the motor user is also affected in other ways. Further information on the subject may help to crystallize our opinions and lead to action which may, at least, keep these regulations within reasonable bounds. The following extract is from *The Saturday Review*.

"There is no doubt that the main reason for the adoption of the haphazard way in which recent taxation legislation is conceived is the desire to force farmers to come in under Schedule D or suffer the penalty of being over-taxed, and the result is that large numbers who have not hitherto kept accounts in a manner that will satisfy the authorities will, for this year at least, be forced to pay on non-existent income, and that when the tax is something near 2s. in the £. Tradesmen often have to pay income-tax in excess of what is right, but they hesitate to submit their books to such scrutiny as the Act calls for. They pay rather than endure disagreeable publicity. Farmers are bad book-keepers, and they will have to suffer accordingly.

One other infamous feature about income-tax is the way it deals with a person's savings. Thrift should be encouraged, but the income-tax directly discourages it by charging a heavier tax on what are called unearned incomes than on incomes obtained as the result of direct physical or mental labour. Dividends on a person's investments are taxable on a higher scale; but profits derived by the re-sale of shares or investments—apart from interest or dividend—pay no tax at all. The investor who puts his £1000 into a company and draws five per cent. pays tax on fifty pounds interest. The speculator who buys one thousand pounds worth of shares and then sells out before a dividend is declared for £1050 (or for any much larger sum) pays no tax on the fifty pounds he has made, as it is not fifty pounds interest on capital, but an increase of the capital itself which he has secured. Similarly, if he lost fifty pounds he would not be allowed to deduct it from his income. It would be a loss on capital.

The income-tax absurdities may be said to find a parallel in the various duties and licence fees which have been suddenly increased in the middle of a current year. A man who has, for example, taken out a licence for a motor, finds that the Government agreement with him for a definite period is repudiated. There are few people who object to giving the Government all the money they need in the present emergency, but it should not be the work of our statesmen to cause a sense of injustice among the taxpayers.

I was for several years a Commissioner of Income-tax in London, and I never went to a meeting of the Commissioners without a feeling of amazement at the stupidities of the system, or want of system, as a means of collecting money for the State. The tax is far more onerous now, and an association of taxpayers should be formed to expose its absurdities. The Surveyors who collect the tax know its defects as well as any."

The Significance of the Amino-Acids.

It is well known that on hydrolysis proteins break down by resolution of the polypeptide linkings in the molecule into an assembly of α-amino-acids, of which some 18 have been separated. Enquiry is now being developed in directions which show that each of these substances possesses its own significance—sometimes greater, sometimes less—in the processes of nutrition. Inasmuch as the proteins do not all alike resolve into the same amino-acids, it is clear that their metabolic value will depend upon the kind of amino-acid produced. In an interesting and lucid lecture upon the subject delivered before the Chemical Society on May 18th by Dr. F. Gowland Hopkins, and now published in the June number of the Society's journal, these "Newer standpoints in the study of nutrition" are carefully discussed.

The starting point of this study is that when a mixture of all the free amino-acids obtainable from protein has entirely replaced the normal intact protein of their food, an adult animal maintains itself, and a young animal grows. In his own experience Dr. Hopkins records that scores of young animals grow steadily during experimental periods when no trace of intact protein, and no other source of flesh-forming material save amino-acids, was passing their mouths.

In a brief and excellent outline* of the salient features of the problem Dr. Frank P. Underhill, professor of pathological chemistry, Yale University, makes similar observations. His conclusion is that the amino-acids must be regarded as foodstuffs capable of supplying the nitrogenous needs of the organism, and that the chief factors to be taken into account with regard to the nutritive value of any protein or proteins are the character and the extent of the amino-acids contained therein. Since it is mainly, if not entirely, in the form of free amino-acids, and not in complex associations of these, that our nitrogenous food begins its proper metabolism, it is obviously valuable to be able to measure the relative nutritive importance of the different molecular groups in the protein molecule. We could then determine, as Dr. Hopkins points out, whether in any particular case the withdrawal of individual amino-acids deprives the animal of something essential, or whether, perhaps, the removal from the food of any particular amino-acid under study may have little effect, because the animal can synthesise it for itself, or dispense with it altogether. We may thus gain a further insight into the question of deficiency diseases.

During the use of the synthetic diets suggested as a basis of inquiry, Dr. Hopkins has found that it is always essential to supply the "at present mysterious vitamine or food hormone factor." The results of the experiments are very remarkable. Thus when an animal is fed on food containing only tryptophan, histidine, tyrosine, lysine, and cystine, that is, five out of the 18 amino-acids of protein, there is a remarkably slow loss of weight, and long maintenance of apparent health. On the other hand, when the five amino-acids mentioned are replaced by another five of simpler aliphatic type, when leucine, valine, alanine, and glycine, together with glutamic acid form the sole nitrogen supply, loss of weight is rapid and the animal soon succumbs. A

* The Physiology of the Amino-acids. By Frank B. Underhill, Ph.D., Professor of Pathological Chemistry, Yale University. London: Oxford University Press. 1915. Pp. 169. Price 6s. net.

familiar case of a non-nutritional protein is gelatin, and, significantly enough, this substance on hydrolysis yields neither tyrosine nor tryptophan. The entire absence of tryptophan from its molecule stamps it at once, says Dr. Hopkins, as a deficient foodstuff. Dr. Hopkins goes even so far as to say that he feels it quite possible that further experiment will show that life can be maintained on a mixture from which many of the amino-acids are lacking.

This suggests that if nutrition can be guaranteed on a quite limited number of amino-acids, the solution of the problem of artificially synthesising our food supply is brought within the region of possibility. On all fours with this are the independent conclusions of Professor Underhill in the work already referred to. Investigations of this character promise ultimately, he suggests, to lead to the assignment of more or less specific functions to the various amino-acids, and hence will indirectly indicate the relative efficiency of this or that protein in bringing about a desired result in nutrition. The whole story is a triumph of bio-chemical research. —*The Lancet.*

Cow giving Bloody Milk.

A judgment has been given by Sheriff Moffatt in an action raised in Falkirk Sheriff Court in which the meaning and effect of a market warranty were discussed. The pursuer in the action, Mrs. Margaret M'Lay, dairy-keeper, Middlerig Farm, Polmont, sued John Johnston, farmer, Carbrook Mains, Larbert, for repayment of the price of a cow purchased by her from the defender at the Falkirk Auction Mart on 8th July, 1915, for £25 15s. She also sued for £5 representing loss and damage alleged to have been sustained by her through defender's breach of contract, in respect that the cow was disconform to warranty. She averred that the defender offered the cow for sale as a milch cow warranted "two days calved and correct in vessel." She alleged that she discovered that the cow gave "bloody milk" unfit for use, and continued to do so until 13th July, when she returned it to the market after intimation to the defender.

The defender admitted having sold the cow with the warranty stated, but pleaded that the condition complained of did not amount to a breach of that warranty. He stated that the warranty is usual in the sale of such cows, and its meaning and effect are well known and understood in the trade. He pleaded that the cow conformed to the warranty in all respects.

The Sheriff, in his judgment, upholds the contentions of the defender and grants him decree of absolvitor, with expenses against the pursuer. The question is, his Lordship remarks, whether a cow giving bloody milk for a period of seven days after calving, and then recovering, is a good cow, which can be described as "correct in vessel." He has no hesitation in answering that question in the affirmative. When the pursuer bought the cow in this case she took the risk of this condition lasting for any natural length of time.

A New Foodstuff.

The Tepary Bean is grown largely for human consumption by the Indian and Spanish settlers throughout Southern Arizona, United States, and Northern Sonora, Mexico, and its cultivation extends westwards into California. An analysis of tepary beans grown in Burma has just been made at the Imperial Institute. The results indicate that the beans possess a high food value, and compare favourably with haricot beans, lentils, and peas, which they closely resemble in composition.

DISEASES OF ANIMALS ACTS 1894 TO 1914, SUMMARY OF RETURNS.

Period.	Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange. ‡		Sheep Scab.	Swine Fever.	
	Out-breaks (a)	Ani-mals.	Out-breaks (a)	Ani-mals.	Out-breaks (b)	Ani-mals.	Out-breaks (b)	Ani-mals.	(b)	Out-breaks (a)	Slaughtered. *
GT. BRITAIN. Week ended Aug. 5	5	6			1	2	23	38		53	35
Corresponding week in 1915 ...	7	7			1	1	10	22		65	226
Corresponding week in 1914 ...	12	13			2	2	8	9		51	670
Corresponding week in 1913 ...	10	11			1	3	27	34	1	41	632
Total for 32 weeks, 1916	353	415	1	24	34	87	1658	3737	178	3095	8474
Corresponding period in 1915 ...	400	458			35	64	‡550	‡1201	159	2812	12586
Corresponding period in 1914 ...	494	535	11	74	70	214	1511	2622	150	2650	28188
Corresponding period in 1913 ...	361	395			108	284	1846	3744	125	1573	21852

‡ The Parasitic Mange Order of 1911 was suspended from 6th August, 1914, to 27th March, 1915, inclusive.

(a) Confirmed. (b) Reported by Local Authorities. † Counties affected, animals attacked :—Stafford 2

Board of Agriculture and Fisheries, August 8, 1916 Excluding outbreaks in army horses.

IRELAND. Week ended **July 29**	...	...	...	...	...	...	Outbreaks 1	6	5	45
Corresponding Week in 1915 ...	...	...	...	...	...	...	...	4	3	16
Corresponding Week in 1914 ...	...	...	...	...	...	...	1	5	4	3
Corresponding Week in 1913 ...	...	...	...	...	...	...	...	1	1	14
Total for 31 weeks, 1916 ...	3	7	...	...	...	...	44	254	200	1183
Corresponding period in 1915 ...	1	1	...	...	1	3	44	268	162	910
Corresponding period in 1914 ...	1	1	76	957	...	...	55	375	142	712
Corresponding period in 1913 ...	...	...	...	...	...	...	93	352	98	589

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, July 31, 1916.

Note.—The figures for the Current Year are approximate only. * As diseased or Exposed to Infection